

Application No.: 10/806,114

Amendments to the Drawings:

The margins on page 2 have been adjusted so that they are the correct size, and the amended page 2 has been labeled a Replacement Sheet.

Fig. 3 has been amended to include the designation --Prior Art--.

REMARKS

This Amendment is filed in response to the Office Action dated December 15, 2005.

This application should be allowed and the case passed to issue. No new matter is raised by this amendment. The amendments to claims 1 and 21 and the specification correct informalities.

Claims 1-25 are pending in this application. Claims 1-25 have been rejected. Claims 1 and 21 are amended.

Drawings

The drawings are objected to because Fig. 3 should be designated as --Prior Art--, and The margins on page 2 appear to be incorrect. These objections are traversed, and reconsideration and withdrawal thereof respectfully requested.

The margins on page 2 have been corrected and Fig. 3 has been designated as Prior Art.

Claim Rejections Under 35 U.S.C. § 112

Claims 1-25 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner asserted that the terms "simultaneously exhibiting increased thermal stability, writability, and signal-to-medium noise ration ("SMNR")" and "slightly" in claim 1 are relative terms. The Examiner alleged that the term "granular" was indefinite because it is used by the claim to mean "discontinuous" while its purported accepted meaning is "a magnetic film possessing distinct crystal grains vis a vis an amorphous magnetic film." The Examiner averred that there is insufficient antecedent basis for "said at least one non-magnetic interlayer" in claim 22.

Claim 1 has been amended to delete the asserted relative terms. Claim 22 has been amended to depend from claim 21. As regards the term "granular," this term is definite. In light of the specification and claims, it is clear how this term is defined. The term "granular" is clearly

defined on page 6 of the instant specification. Furthermore, the purported accepted meaning of the term "granular" is traversed. Ikeda et al. (U.S. Pat. No. 6,468,670) defines the term granular (col. 1, lines 20-26) in the same manner as the instant specification. Thus, it is clear that Applicants use of the term granular is an accepted meaning in this art.

Applicants submit that the claims fully comport with the requirements of 35 U.S.C. § 112.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-5 and 9-12, 15, 16, and 19-25 were rejected under 35 U.S.C. § 102(e) as being anticipated by Girt et al. (U.S. Pat. No. 6,777,112). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the invention as claimed, and the cited prior art.

An aspect of the invention, per claim 1, is an anti-ferromagnetically coupled, granular-continuous ("AFC-GC") magnetic recording medium comprising a layer stack formed on a surface of a non-magnetic substrate. The magnetic recording medium includes a continuous ferromagnetic stabilizing layer, a non-magnetic spacer layer, and a granular ferromagnetic layer. The continuous ferromagnetic stabilizing layer and the granular ferromagnetic layer are anti-ferromagnetically coupled across the non-magnetic spacer layer. The amount of anti-ferromagnetic coupling is preselected to ensure magnetic relaxation after writing. Lateral interactions in the granular, ferromagnetic recording layer are substantially completely eliminated or suppressed and the exchange coupling strength in the continuous ferromagnetic stabilizing layer is preselected to be larger than the strength of the anti-ferromagnetic coupling provided by the non-magnetic spacer layer to thereby enhance thermal stability of the recording bits.

The Examiner asserted that Girt et al. disclose a magnetic recording medium including a continuous ferromagnetic stabilizing layer, a non-magnetic spacer layer, and a granular ferromagnetic layer, wherein the continuous ferromagnetic layer and the granular ferromagnetic layer are anti-ferromagnetically coupled. The Examiner considered the "amount of anti-ferromagnetically coupling preselected to ensure magnetic relaxation after writing" to be an intended use limitation. The Examiner asserted that the exchange coupling strength in the continuous ferromagnetic stabilizing layer is preselected to be larger than the strength of the anti-ferromagnetic coupling provided by the non-magnetic spacer layer to thereby enhance thermal stability of the recording bits limitation to be inherent or obvious in the prior art because the prior art is either identical or substantially identical.

Girt et al., however, do not anticipate the claimed magnetic recording medium because Girt et al. do not suggest the AFC-GC magnetic recording medium wherein the exchange coupling strength in the continuous ferromagnetic stabilizing layer is preselected to be larger than the strength of the anti-ferromagnetic coupling provided by the non-magnetic spacer layer to thereby enhance thermal stability of the recording bits. The Examiner asserted that this would be an inherent feature of the Girt et al. magnetic recording medium. However, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). "Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)(citations omitted). "In relying upon a theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly

inherent characteristic necessarily flows from the teachings of the applied prior art.” *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). The Examiner has not provided a basis for asserting Girt et al. inherently have the exchange coupling strength in the continuous ferromagnetic stabilizing layer that is preselected to be larger than the strength of the anti-ferromagnetic coupling provided by the non-magnetic spacer layer to thereby enhance thermal stability of the recording bits. The Examiner's assertion of inherency appears to be based on impermissible hindsight reasoning.

Applicants further traverse the Examiner assumption that the "amount of anti-ferromagnetically coupling preselected to ensure magnetic relaxation after writing" is an intended use limitation. To the contrary, this is a structural limitation, as the amount of anti-ferromagnetically coupling required has to ensure magnetic relaxation after writing.

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the disclosure in a single reference of each element of a claimed invention. *Helifix Ltd. v. Blok-Lok Ltd.*, 208 F.3d 1339, 54 USPQ2d 1299 (Fed. Cir. 2000); *Electro Medical Systems S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 32 USPQ2d 1017 (Fed. Cir. 1994); *Hoover Group, Inc. v. Custom Metalcraft, Inc.*, 66 F.3d 399, 36 USPQ2d 1101 (Fed. Cir. 1995); *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051 (Fed. Cir. 1987). Because Girt et al. do not disclose that the exchange coupling strength in the continuous ferromagnetic stabilizing layer is preselected to be larger than the strength of the anti-ferromagnetic coupling provided by the non-magnetic spacer layer to thereby enhance thermal stability of the recording bits, as required by claim 1, Girt et al. do not anticipate claim 1.

Applicants further submit that Girt et al. do not suggest the claimed anti-ferromagnetically coupled, granular-continuous ("AFC-GC") magnetic recording medium.

Claim Rejections Under 35 U. S. C. § 103

Claims 6-8, 17, and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Girt et al. in view of Applicants' alleged admitted prior art.

Claims 13 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Girt et al. in view of Oikawa et al. (U.S. Pat. Pub. No. 2002/0136929).

These rejections are traversed, and reconsideration and withdrawal thereof respectfully requested.

The instant claims are allowable over combinations of Girt et al. with the alleged admitted prior art and Oikawa et al. at least because Girt et al. does not qualify as a prior art reference under 35 U.S.C. § 103(c). Girt et al. was cited as prior art via 35 U.S.C. § 102(e) because it has an earlier filing date than the instant application and was copending with the instant application. The instant application and Girt et al. were, at the time the instant invention was made, owned by the same person (Seagate Technology LLC) or subject to an obligation of assignment to the same person. Ergo, by virtue of 35 U.S.C. §103(c), Girt et al. may not be relied upon to support a rejection under 35 U.S.C. §103. (*See* MPEP § 706.02(I)(2)(II)).

Claims 1-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ikeda et al. (U.S. Pat. No. 6,468,670) in view of Oikawa et al., Carey et al. (U.S. Pat. No. 6,280,813), and Applicants' alleged admissions. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The Examiner asserted that Ikeda et al. disclose a magnetic recording medium comprising a continuous ferromagnetic layer and a granular magnetic layer. The Examiner

acknowledges that Ikeda et al. do not disclose the continuous and granular magnetic layers are anti-ferromagnetically coupled. The Examiner averred that Carey et al. disclose anti-ferromagnetically coupled layers to achieve high recording density. Though Ikeda et al. is directed to perpendicular media and Carey is directed to longitudinal media, the Examiner alleged that Applicants' admitted that perpendicular and longitudinal medium structures are art recognized equivalent media structures.

It would not have been obvious to combine Ikeda et al., Oikawa et al., and Carey et al. in the manner asserted by the Examiner. Contrary to the Examiner's assertions, Applicants have not admitted that the different types of magnetic recording media are functional equivalents. The Examiner indicated that such an admission was made on page 5 and 6 of the instant specification. However, there is clearly no such admission made on pages 5 and 6 that the different media types are known equivalent AFC media. To the contrary, Applicants disclose on pages 2-3 of the specification, that perpendicular magnetic recording media are superior to longitudinal magnetic recording media. The Examiner has not pointed out with particularity where Applicants have admitted that the different media types were functional equivalents. Rather, the Examiner merely provides a conclusory statement without any supporting evidence. Clearly, the Examiner's assertion that Applicants have admitted that the different media types are functionally equivalent is erroneous.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.

Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Ikeda et al., Oikawa et al., and Carey et al. to combine the references as asserted by the Examiner to provide the magnetic recording medium, as required by claim 1.

The requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103 is not an abstract concept, but must stem from the applied prior art as a whole and realistically impel one having ordinary skill in the art to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989).

Accordingly, the Examiner is charged with the initial burden of identifying a source in the applied prior art for the requisite realistic motivation. *Smiths Industries Medical System v. Vital Signs, Inc.*, 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1449 (Fed. Cir. 1997). There is no motivation in Ikeda et al., Oikawa et al., and Carey et al. to combine the references as asserted by the Examiner to provide the magnetic recording medium, as required by claim 1.

The only teaching of the claimed anti-ferromagnetically coupled, granular-continuous ("AFC-GC") magnetic recording medium wherein the exchange coupling strength in the continuous ferromagnetic stabilizing layer is preselected to be larger than the strength of the anti-ferromagnetic coupling provided by the non-magnetic spacer layer to thereby enhance thermal stability of the recording bits is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The Examiner's retrospective assessment of the claimed invention and use of unsupported conclusory statements are not legally sufficient to generate a

case of *prima facie* obviousness. The motivation for modifying the prior art must come from the prior art and must be based on facts. The Examiner is not free to ignore the judicial requirement for facts. To do so is legal error. *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002).

Claims 1, 2, 4, 5, 9-14, and 19-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fullerton et al. (U.S. Pat. No. 6,383,668) in view of Oikawa et al. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The Examiner averred that Fullerton et al. disclose a magnetic recording medium comprising a continuous ferromagnetic layer 36, a non-magnetic spacer layer, and a second ferromagnetic layer 25, wherein the continuous ferromagnetic layer and second ferromagnetic layer are anti-ferromagnetically coupled. The Examiner acknowledged that Fullerton et al. do not disclose that the second ferromagnetic layer is discontinuous. The Examiner relied on the teaching of Oikawa et al. to conclude that it would have been obvious to have a discontinuous second ferromagnetic layer to provide high coercive force at low cost.

Contrary to the Examiner's assertions, Fullerton et al. do not suggest that the Examiner-asserted second ferromagnetic layer is anti-ferromagnetically coupled with the continuous layer. Fullerton et al. disclose that layers 32 and 34 are anti-ferromagnetically coupled, not layers 34 and 25, as asserted by the Examiner.

The instant claims are further distinguishable over Fullerton et al. and Oikawa et al. because neither Fullerton et al. nor Oikawa et al. suggest the magnetic recording medium wherein the exchange coupling strength in the continuous ferromagnetic stabilizing layer is preselected to be larger than the strength of the anti-ferromagnetic coupling provided by the non-magnetic spacer layer to thereby enhance thermal stability of the recording bits, as required by claim 1.

Claims 6-8, 17, and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fullerton et al. in view of Oikawa et al. and further in view of Applicants' alleged admissions. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The combination of Fullerton et al., Oikawa et al. and Applicants' alleged admissions do not suggest the claimed magnetic recording media. As explained *infra*, Applicants have made no such admission that the different media types were functional equivalents.

Claims 15 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fullerton et al. in view of Oikawa et al. and further in view of Igarashi et al. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The combination of Fullerton et al., Oikawa et al., and Igarashi et al. do not suggest the claimed magnetic recording media because Igarashi et al. do not cure the deficiencies of Fullerton et al. and Oikawa et al. Igarashi et al. do not suggest an anti-ferromagnetically coupled, granular-continuous ("AFC-GC") magnetic recording medium wherein the exchange coupling strength in the continuous ferromagnetic stabilizing layer is preselected to be larger than the strength of the anti-ferromagnetic coupling provided by the non-magnetic spacer layer to thereby enhance thermal stability of the recording bits, as required by claim 1.

The dependent claims are allowable for at least the same reasons as independent claim 1 and further distinguish the claimed magnetic recording medium.

In view of the above amendments and remarks, Applicants submit that this case should be allowed and passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

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To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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